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The present invention may be understood with reference to the following drawings, in which like elements are indicated by like numbers. These drawings are provided to illustrate selected embodiments of the present invention and are not intended to limit the scope of the invention.

Fig. 1 is a circuit diagram of an electrical model that represents a power distribution network suitable for use with a processor.

Fig. 2 represents a step response and an impulse response for the power distribution network of Fig. 1.

Fig. 3 is a flow chart representing one embodiment of a method in accordance with the present invention for simulating voltage variations in an integrated circuit.

Fig. 4 is a schematic representation of the method shown in Fig. 3

Fig. 5 represents the output of a power simulator for a processor executing a block of code over approximately 2000 clock cycles.

Fig. 6 represents the supply voltage of the processor simulated in Fig. 5 over the same interval, as determined using a simulator in accordance with the present invention.

Fig. 7 is a block diagram representing one embodiment of a computer system employing a di/dt control mechanism.

Fig. 8A is a block diagram of one embodiment of a di/dt controller in accordance with the present invention.

through
Figs. 8B-8E are block diagrams of various embodiments of the current to voltage computation unit of Fig. 8A.

Fig. 9 represents a simulation of the output power of the processor of Fig. 7, operating under control of the current control unit of Fig. 8A.